

TABLE 6.5 BRACHIAL PLEXUS AND NERVES OF UPPER LIMB

Nerve	Origin ^a	Course	Structures Innervated
Supraclavicular branches			
Dorsal scapular	Posterior aspect of anterior ramus of C5 with a frequent contribution from C4	Pierces middle scalene; descends deep to levator scapulae and rhomboids	Rhomboids; occasionally supplies levator scapulae
Long thoracic	Posterior aspect of anterior rami of C5, C6, C7	Superior two rami pierce middle scalene; passes through cervicoaxillary canal, descending posterior to C8 and T1 anterior rami; runs inferiorly on superficial surface of serratus anterior	Serratus anterior
Suprascapular	Superior trunk, receiving fibers from C5 , C6, and often C4	Passes laterally across lateral cervical region (posterior triangle of neck), superior to brachial plexus; then through scapular notch deep to transverse scapular ligament	Supraspinatus and infraspinatus muscles; glenohumeral (shoulder) joint
Subclavian nerve (nerve to subclavius)	Superior trunk, receiving fibers from C5, C6 , and often C4	Descends posterior to clavicle and anterior to brachial plexus and subclavian artery; often giving an <i>accessory root to phrenic nerve</i>	Subclavius and sternoclavicular joint (accessory phrenic root innervates diaphragm)

TABLE 6.5 BRACHIAL PLEXUS AND NERVES OF UPPER LIMB (*continued*)

Nerve	Origin ^a	Course	Structures Innervated
Infraclavicular branches			
Lateral pectoral	Side branch of lateral cord, receiving fibers from C5, C6 , C7	Pierces costocoracoid membrane to reach deep surface of pectoral muscles; a <i>communicating branch to the medial pectoral nerve</i> passes anterior to axillary artery and vein	Primarily pectoralis major, but some lateral pectoral nerve fibers pass to pectoralis minor via branch to medial pectoral nerve
Musculocutaneous	Terminal branch of lateral cord, receiving fibers from C5–C7	Exits axilla by piercing coracobrachialis; descends between biceps brachii and brachialis, supplying both; continues as <i>lateral cutaneous nerve of forearm</i>	Muscles of anterior compartment of arm (coracobrachialis, biceps brachii, and brachialis); skin of lateral aspect of forearm
Median	<i>Lateral root of median nerve</i> is a terminal branch of lateral cord (C6, C7 fibers); <i>medial root of median nerve</i> is a terminal branch of medial cord (C8, T1 fibers)	Lateral and medial roots merge to form median nerve lateral to axillary artery; descends through arm adjacent to brachial artery, with nerve gradually crossing anterior to artery to lie medial to artery in cubital fossa	Muscles of anterior forearm compartment (except for flexor carpi ulnaris and ulnar half of flexor digitorum profundus), five intrinsic muscles in thenar half of palm and palmar skin
Medial pectoral	Side branches of medial cord, receiving fibers from C8, T1	Passes between axillary artery and vein; then pierces pectoralis minor and enters deep surface of pectoralis major; although it is called <i>medial</i> for its origin from medial cord, it lies lateral to lateral pectoral nerve	Pectoralis minor and sternocostal part of pectoralis major
Medial cutaneous nerve of arm		Smallest nerve of plexus; runs along medial side of axillary and brachial veins; communicates with <i>intercostobrachial nerve</i>	Skin of medial side of arm, as far distal as medial epicondyle of humerus and olecranon of ulna
Median cutaneous nerve of forearm		Initially runs with ulnar nerve (with which it may be confused) but pierces deep fascia with basilic vein and enters subcutaneous tissue, dividing into anterior and posterior branches	Skin of medial side of forearm, as far distal as wrist
Ulnar	Larger terminal branch of medial cord, receiving fibers from C8, T1, and often C7	Descends medial arm; passes posterior to medial epicondyle of humerus; then descends ulnar aspect of forearm to hand	Flexor carpi ulnaris and ulnar half of flexor digitorum profundus (forearm); most intrinsic muscles of hand; skin of hand medial to axial line of digit 4
Upper subscapular	Side branch of posterior cord, receiving fibers from C5	Passes posteriorly, entering subscapularis directly	Superior portion of subscapularis
Lower subscapular	Side branch of posterior cord, receiving fibers from C6	Passes inferolaterally, deep to subscapular artery and vein	Inferior portion of subscapularis and teres major
Thoracodorsal	Side branch of posterior cord, receiving fibers from C6, C7 , C8	Arises between upper and lower subscapular nerves and runs inferolaterally along posterior axillary wall to apical part of latissimus dorsi	Latissimus dorsi
Axillary	Terminal branch of posterior cord, receiving fibers from C5 , C6	Exits axillary fossa posteriorly, passing through quadrangular space ^b with posterior circumflex humeral artery; gives rise to <i>superior lateral brachial cutaneous nerve</i> ; then winds around surgical neck of humerus deep to deltoid	Glenohumeral (shoulder) joint; teres minor and deltoid muscles; skin of superolateral arm (over inferior part of deltoid)
Radial	Larger terminal branch of posterior cord (largest branch of plexus), receiving fibers from C5–T1	Exits axillary fossa posterior to axillary artery; passes posterior to humerus in radial groove with profunda brachii artery between lateral and medial heads of triceps; perforates lateral intermuscular septum; enters cubital fossa, dividing into <i>superficial</i> (cutaneous) and <i>deep</i> (motor) <i>radial nerves</i>	All muscles of posterior compartments of arm and forearm; skin of posterior and inferolateral arm, posterior forearm, and dorsum of hand lateral to axial line of digit 4

^aBoldface **C5** indicates primary component of the nerve.

^bBounded superiorly by the subscapularis, head of humerus, and teres minor; inferiorly by the teres major; medially by the long head of the triceps; and laterally by the coracobrachialis and surgical neck of the humerus.

TABLE 6.9 NERVES OF FOREARM

Nerve	Origin	Course in Forearm
Median	By union of lateral root of median nerve (C6, C7, from lateral cord of brachial plexus) with medial root (C8, T1) from medial cord	Enters cubital fossa medial to brachial artery; exits by passing between heads of pronator teres; descends in fascial plane between flexors digitorum superficialis and profundus; runs deep to palmaris longus tendon as it approaches flexor retinaculum to traverse carpal tunnel
Anterior interosseous	Median nerve in distal part of cubital fossa	Descends on anterior aspect of interosseous membrane with artery of same name, between FDP and FPL, to pass deep to pronator quadratus
Palmar cutaneous branch of median nerve	Median nerve of middle to distal forearm, proximal to flexor retinaculum	Passes superficial to flexor retinaculum to reach skin of central palm
Ulnar	Larger terminal branch of medial cord of brachial plexus (C8, T1, often receives fibers from C7)	Enters forearm by passing between heads of flexor carpi ulnaris, after passing posterior to medial epicondyle of humerus; descends forearm between FCU and FDP; becomes superficial in distal forearm
Palmar cutaneous branch of ulnar nerve	Ulnar nerve near middle of forearm	Descends anterior to ulnar artery; perforates deep fascia in distal forearm; runs in subcutaneous tissue to palmar skin medial to axis of 4th digit
Dorsal cutaneous branch of ulnar nerve	Ulnar nerve in distal half of forearm	Passes posteroinferiorly between ulna and flexor carpi ulnaris; enters subcutaneous tissue to supply skin of dorsum medial to axis of 4th digit
Radial	Larger terminal branch of posterior cord of brachial plexus (C5–T1)	Enters cubital fossa between brachioradialis and brachialis; anterior to lateral epicondyle divides into terminal superficial and deep branches
Posterior cutaneous nerve of forearm	Radial nerve, as it traverses radial groove of posterior humerus	Perforates lateral head of triceps; descends along lateral side of arm and posterior aspect of forearm to wrist
Superficial branch of radial nerve	Sensory terminal branch of radial nerve, in cubital fossa	Descends between pronator teres and brachioradialis, emerging from latter to arborize over anatomical snuff box and supply skin of dorsum lateral to axis of 4th finger
Deep branch of radial/posterior interosseous nerve	Motor terminal branch of radial nerve, in cubital fossa	Deep branch exits cubital fossa winding around neck of radius, penetrating and supplying supinator; emerges in posterior compartment of forearm as posterior interosseous nerve; descends on membrane with artery of same name
Lateral cutaneous nerve of forearm	Continuation of musculocutaneous nerve distal to muscular branches	Emerges lateral to biceps brachii on brachialis, running initially with cephalic vein; descends along lateral border of forearm to wrist
Medial cutaneous nerve of forearm	Medial cord of brachial plexus, receiving C8 and T1 fibers	Perforates deep fascia of arm with basilic vein proximal to cubital fossa; descends medial aspect of forearm in subcutaneous tissue to wrist

FCU, flexor carpi ulnaris; FDP, flexor digitorum profundus; FPL, flexor pollicis longus.

TABLE 6.4 ARTERIES OF PROXIMAL UPPER LIMB (SHOULDER REGION AND ARM) (*cont'd.*)

Artery	Origin		Course
Superior thoracic	First part	Axillary artery	Runs anteromedially along superior border of pectoralis minor; then passes between it and pectoralis major to thoracic wall; helps supply 1st and 2nd intercostal spaces and superior part of serratus anterior
Thoraco-acromial	Second part		Curls around superomedial border of pectoralis minor; pierces costocoracoid membrane (clavipectoral fascia); divides into four branches: pectoral, deltoid, acromial, and clavicular
Lateral thoracic			Descends along axillary border of pectoralis minor; follows it onto thoracic wall, supplying lateral aspect of breast
Circumflex humeral (anterior and posterior)	Third part		Encircle surgical neck of humerus, anastomosing with each other laterally; larger posterior branch traverses quadrangular space
Subscapular			Descends from level of inferior border of subscapularis along lateral border of scapula, dividing within 2–3 cm into terminal branches, the circumflex scapular and thoracodorsal arteries
Circumflex scapular	Subscapular artery		Curves around lateral border of scapula to enter infraspinous fossa, anastomosing with suprascapular artery
Thoracodorsal	Subscapular artery		Continues course of subscapular artery, descending with thoracodorsal nerve to enter apex of latissimus dorsi
Deep brachial artery of arm	Near its origin Near middle of arm	Brachial artery	Accompanies radial nerve along radial groove of humerus, supplying posterior compartment of arm and participating in periarticular arterial anastomoses around elbow joint
Superior ulnar collateral	Near middle of arm		Accompanies ulnar nerve to posterior aspect of elbow; anastomoses with posterior ulnar recurrent artery
Inferior ulnar collateral	Superior to medial epicondyle of humerus		Passes anterior to medial epicondyle of humerus to anastomose with anterior ulnar recurrent artery

TABLE 6.10 ARTERIES OF FOREARM AND WRIST

Artery	Origin	Course in Forearm
Ulnar	As larger terminal branch of brachial artery in cubital fossa	Descends inferomedially and then directly inferiorly deep to superficial pronator teres, palmaris longus, and flexor digitorum superficialis to reach medial side of forearm; passes superficial to flexor retinaculum at wrist in ulnar (Guyon) canal to enter hand
Anterior ulnar recurrent artery	Ulnar artery just distal to elbow joint	Passes superiorly between brachialis and pronator teres, supplying both; then anastomoses with inferior ulnar collateral artery anterior to medial epicondyle
Posterior ulnar recurrent artery	Ulnar artery distal to anterior ulnar recurrent artery	Passes superiorly, posterior to medial epicondyle and deep to tendon of flexor carpi ulnaris; then anastomoses with superior ulnar collateral artery
Common interosseous	Ulnar artery in cubital fossa, distal to bifurcation of brachial artery	Passes laterally and deeply, terminating by dividing into anterior and posterior interosseous arteries
Anterior interosseous	As terminal branches of common interosseous artery, between radius and ulna	Passes distally on anterior aspect of interosseous membrane to proximal border of pronator quadratus; pierces membrane and continues distally to join dorsal carpal arch on posterior aspect of interosseous membrane
Posterior interosseous		Passes to posterior aspect of interosseous membrane, giving rise to recurrent interosseous artery; runs distally between superficial and deep extensor muscles, supplying both
Recurrent interosseous	Posterior interosseous artery, between radius and ulna	Passes superiorly, posterior to proximal radio-ulnar joint, to anastomose with middle collateral artery (from deep artery of arm)
Palmar carpal branch	Ulnar artery in distal forearm	Runs across anterior aspect of wrist, deep to tendons of flexor digitorum profundus, to anastomose with the palmar carpal branch of the radial artery, forming palmar carpal arch
Dorsal carpal branch	Ulnar artery, proximal to pisiform	Passes across dorsal surface of wrist, deep to extensor tendons, to anastomose with dorsal carpal branch of radial artery, forming dorsal carpal arch
Radial	As smaller terminal branch of brachial artery in cubital fossa	Runs inferolaterally under cover of brachioradialis; lies lateral to flexor carpi radialis tendon in distal forearm; winds around lateral aspect of radius and crosses floor of anatomical snuff box to pierce 1st dorsal interosseous muscle
Radial recurrent	Lateral side of radial artery, just distal to brachial artery bifurcation	Ascends between brachioradialis and brachialis, supplying both (and elbow joint); then anastomoses with radial collateral artery (from profunda brachii artery)
Palmar carpal branch	Distal radial artery near distal border of pronator quadratus	Runs across anterior wrist deep to flexor tendons to anastomose with the palmar carpal branch of ulnar artery to form palmar carpal arch
Dorsal carpal branch	Distal radial artery in proximal part of snuff box	Runs medially across wrist deep to pollicis and extensor radialis tendons, anastomoses with ulnar dorsal carpal branch forming dorsal carpal arch

TABLE 6.12 ARTERIES OF HAND

Artery	Origin	Course
Superficial palmar arch	Direct continuation of ulnar artery; arch is completed on lateral side by superficial branch of radial artery or another of its branches	Curves laterally deep to palmar aponeurosis and superficial to long flexor tendons; curve of arch lies across palm at level of distal border of extended thumb
Deep palmar arch	Direct continuation of radial artery; arch is completed on medial side by deep branch of ulnar artery	Curves medially, deep to long flexor tendons; is in contact with bases of metacarpals
Common palmar digitals	Superficial palmar arch	Pass distally on lumbricals to webbing of fingers
Proper palmar digitals	Common palmar digital arteries	Run along sides of 2nd–5th digits
Princeps pollicis	Radial artery as it turns into palm	Descends on palmar aspect of 1st metacarpal; divides at base of proximal phalanx into two branches that run along sides of thumb
Radialis indicis	Radial artery; but may arise from princeps pollicis artery	Passes along lateral side of index finger to its distal end
Dorsal carpal arch	Radial and ulnar arteries	Arches within fascia on dorsum of hand
Palmar carpal arch	Radial and ulnar arteries	Arches on anterior aspect of wrist